

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 89-ANE-35; Amdt. 39-6337]

Airworthiness Directives; General Electric Co. (GE) CF6-6 Series Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule, request for comments.

SUMMARY: This amendment adopts a new airworthiness directive (AD) which establishes ultrasonic inspection requirements for certain Stage 1 fan disks on CF6-6 series turbofan engines installed in McDonnell Douglas DC10-10 aircraft. The AD is needed to identify and remove from service Stage 1 fan disks which may have metallurgical imperfections. Such imperfections can adversely affect the service life of the disk.

DATES: Effective—October 7, 1989.

Comments for inclusion in the docket must be received on or before November 7, 1989.

Compliance: As indicated in the body of the AD.

ADDRESSES: Comments on the amendment may be mailed in duplicate to Federal Aviation Administration, New England Region, Office of the Assistant Chief Counsel, Attention: Rules Docket No. 89-ANE-35, 12 New England Executive Park, Burlington, Massachusetts 01803, or delivered in duplicate to Room 311, at the above address.

Comments must be marked: Docket No. 89-ANE-35.

Comments may be inspected at the above location in Room 311, between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays.

The applicable General Electric Service Bulletin (CF6-6) 72-947, dated September 15, 1989, and General Electric Manufacturing and Field Quality Procedures Nos. 391, 384, 385, and 389 may be obtained from General Electric Company, Technical Publications Department, 1 Neumann Way, Cincinnati, Ohio 45215, or may be examined in the Regional Rules Docket.

FOR FURTHER INFORMATION CONTACT: Daniel S. Kerman, Engine Certification Branch, ANE-142, Engine Certification Office, Engine and Propeller Directorate, Aircraft Certification Service, Federal Aviation Administration, 12 New England Executive Park, Burlington,

Massachusetts 01803; telephone (617) 270-2410.

SUPPLEMENTARY INFORMATION: The FAA has determined that certain Stage 1 fan disks installed in GE CF8-6 series engines may have non-homogeneous material properties. Although the investigation has not yet revealed a definitive cause of the United Airlines Flight 232, Sioux City, Iowa, accident, engine damage and containment case witness marks corroborate the engineering analysis that the most probable failure scenario was a fracture of the fan disk. As part of the investigation of the Sioux City accident, all companion disk forgings from the same melt lot have been removed from service for full metallurgical evaluation. One of these disks was found to have a grain structure anomaly. The metallurgical examination of an ultrasonic indication in one of the companion disks has determined the presence of a type 1 imperfection (alpha segregation) with evidence of micro-cracking. The FAA has also determined that the presence of type 1 imperfections in the Stage 1 fan disk may reduce the fatigue properties of the material thereby adversely affecting the service life of the disk. A further review of process records has revealed three populations of material heat lots having different susceptibility to type 1 imperfections. Although the relationship of these material imperfections to the fracture of the disk involved in the Sioux City accident has not been established, the FAA has determined that ultrasonic inspections are required to ensure that detrimental imperfections are not present.

Since this condition is likely to exist or develop on other engines of the same type design, this AD is being issued to require a contact ultrasonic inspection and an immersion ultrasonic inspection of the Stage 1 fan disk.

The investigation is continuing and this AD may be amended upon completion of the investigation.

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and public procedure hereon are impracticable, and good cause exists for making this amendment effective in less than 30 days.

Although this action is in the form of a final rule which involves requirements affecting immediate flight safety and, thus, was not preceded by notice and public procedure, comments are invited on the rule. Interested persons are invited to comment on this rule by submitting such written data, views, or arguments as they may desire.

Communications should identify the regulatory docket number and be submitted in duplicate to the address specified above.

All communications received on or before the closing date for comments will be considered by the FAA. This rule may be amended in light of comments received. Comments that provided a factual basis supporting the views and suggestions presented are particularly helpful in evaluating the effectiveness of the AD and determining whether additional rulemaking is needed.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify the rule. All comments submitted will be available both before and after the closing date for comments in Room 311, at the Office of the Assistant Chief Counsel, 12 New England Executive Park, Burlington, Massachusetts, for examination by interested persons. A report summarizing each FAA-public contact, concerned with the substance of this AD, will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this amendment must submit a self-addressed, stamped postcard on which the following statement is made: Comments to Docket No. 89-ANE-35. The postcard will be date/time stamped and returned to the commenter.

The regulations adopted herein do not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

The FAA has determined that this regulation is an emergency regulation that is not considered to be major under Executive Order 12291. It is impracticable for the agency to follow the procedures of Order 12291 with respect to this rule since the rule must be issued immediately to correct an unsafe condition in aircraft. It has been further determined that this action involves an emergency regulation under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). If this action is subsequently determined to involve a significant/major regulation, a final regulatory evaluation or analysis, as appropriate, will be prepared and placed in the regulatory docket (otherwise, an evaluation or analysis is

not required). A copy of it, when filed, may be obtained from the Regional Rules Docket.

List of Subjects in 14 CFR Part 39

Engines, Air transportation, Aircraft, Aviation safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration (FAA) amends part 39 of the Federal Aviation Regulations (FAR) as follows:

PART 39—[AMENDED]

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1421, and 1423; 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983); and 14 CFR 11.89.

§ 39.13 [Amended]

2. Section 39.13 is amended by adding the following new airworthiness directive (AD):

General Electric Company: Applies to General Electric Company (GE) CF8-6 Series turbofan engines installed in McDonnell Douglas DC10-10 Aircraft.

Compliance is required as indicated, unless already accomplished.

To detect the existence of metallurgical imperfections in Stage 1 fan disks which could adversely affect Stage 1 fan disk service life, ultrasonic inspect all Stage 1 fan disks in accordance with Appendix I to this AD, and the following schedule:

(a) All stage 1 fan disks with those serial numbers listed in Table 1 of this AD, immersion ultrasonic inspect no later than October 27, 1989.

(b) All stage 1 fan disks identified by those serial numbers listed in Table 2 of this AD, as follows:

(1) Remove fan rotor spinner cone and contact ultrasonic inspect the installed fan disk no later than November 21, 1989.

(2) Immersion ultrasonic inspect within the next 500 cycles in service after accomplishing the contact ultrasonic inspection requirements of paragraph (b)(1) above, or at the next shop visit after October 7, 1989, or no later than April 1, 1990, whichever comes first.

(c) All stage 1 fan disks identified by serial numbers listed in Table 3 of this AD, as follows:

(1) Remove fan rotor spinner cone and contact ultrasonic inspect the installed fan disk no later than February 4, 1990, and reinspect at intervals not to exceed 500 cycles since last contact ultrasonic inspection until the immersion ultrasonic requirement of paragraph (c)(2) has been accomplished.

(2) Immersion ultrasonic inspect at the next shop visit after October 7, 1989, but no later than December 31, 1990.

Notes: (1) Disks which have been previously immersion ultrasonic inspected in accordance with General Electric

Commercial Engine Memorandum No. 98, dated August 25, 1989, are considered to be in compliance with the immersion ultrasonic inspection requirements of paragraphs (a), (b), and (c) above.

(2) For the purpose of this AD, "shop visit" is defined as the induction of the engine into the shop for any reason.

(3) Accomplishment of the immersion ultrasonic inspection requirements of paragraphs (b)(2) and (c)(2) above relieves the requirements for contact ultrasonic inspections of paragraphs (b)(1) and (c)(1) above.

(d) Remove from service, prior to further flight, fan disks inspected in accordance with paragraphs (a), (b), and (c) above which do not meet the acceptance criteria of Appendix I to this AD and replace with a serviceable part. Report inspection findings in writing within 10 days of the inspection to the Manager, Engine Certification Office, ANE-140, Engine and Propeller Directorate, Aircraft Certification Service, 12 New England Executive Park, Burlington, Massachusetts 01803; Telex No. 949301 FAANE BURL.

Information collection requirements contained in this regulation (§ 39.13) have been approved by the Office of Management and Budget under the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96-511) and have been assigned OMB Control Number 2120-0056.

(e) Aircraft may be ferried in accordance with the provisions of FAR 21.197 and 21.199 at a base where the AD can be accomplished.

(f) Upon submission of substantiating data to an owner or operator through an FAA Airworthiness Inspector, an alternate method of compliance with the requirements of this AD or adjustments to the compliance schedules specified in this AD may be approved by the Manager, Engine Certification Office, Engine and Propeller Directorate, Aircraft Certification Service, Federal Aviation Administration, 12 New England Executive Park, Burlington, Massachusetts 01803.

Table 1

MPOO0382	MPOO0384	MPOO0387
MPOO0383	MPOO0386	MPOO0388

Table 2

MPOO0352	MPOO0375	MPOA0108
MPOO0354	MPOO0376	MPOA0109
MPOO0357	MPOO0377	MPOA0110
MPOO0358	MPOO0378	MPOA0111
MPOO0359	MPOO0379	MPOA0112
MPOO0360	MPOO0380	MPOA0113
MPOO0361	MPOO0389	MPOA0115
MPOO0362	MPOO0390	MPOA0117
MPOO0363	MPOO0393	MPOA0133
MPOO0364	MPOO0395	MPOA0138
MPOO0365	MPOO0397	MPOA0140
MPOO0368	MPOO0398	MPOA0141
MPOO0370	MPOO0399	MPOA0142
MPOO0371	MPOO0402	MPOA0143
MPOO0372	MPOO0404	MPOA0145
MPOO0373	MPOO0407	
MPOO0374	MPOO0411	

Table 3

MPOO0150	MPOO0154	MPOO0159
MPOO0151	MPOO0155	MPOO0160
MPOO0152	MPOO0158	MPOO0161
MPOO0153	MPOO0158	MPOO0162

MPOO0163	MPOO0228	MPOO0286
MPOO0168	MPOO0229	MPOO0289
MPOO0171	MPOO0230	MPOO0290
MPOO0172	MPOO0231	MPOO0291
MPOO0173	MPOO0232	MPOO0292
MPOO0175	MPOO0233	MPOO0293
MPOO0176	MPOO0234	MPOO0295
MPOO0177	MPOO0235	MPOO0297
MPOO0178	MPOO0236	MPOO0298
MPOO0179	MPOO0237	MPOO0299
MPOO0180	MPOO0238	MPOO0300
MPOO0181	MPOO0240	MPOO0302
MPOO0182	MPOO0241	MPOO0303
MPOO0184	MPOO0242	MPOO0304
MPOO0185	MPOO0243	MPOO0305
MPOO0186	MPOO0244	MPOO0308
MPOO0187	MPOO0245	MPOO0309
MPOO0188	MPOO0246	MPOO0311
MPOO0189	MPOO0247	MPOO0312
MPOO0190	MPOO0248	MPOO0313
MPOO0191	MPOO0249	MPOO0314
MPOO0193	MPOO0250	MPOO0315
MPOO0194	MPOO0251	MPOO0316
MPOO0195	MPOO0253	MPOO0317
MPOO0196	MPOO0254	MPOO0318
MPOO0197	MPOO0255	MPOO0319
MPOO0198	MPOO0257	MPOO0320
MPOO0199	MPOO0258	MPOO0321
MPOO0200	MPOO0260	MPOO0322
MPOO0204	MPOO0263	MPOO0323
MPOO0205	MPOO0264	MPOO0325
MPOO0206	MPOO0265	MPOO0326
MPOO0207	MPOO0266	MPOO0331
MPOO0208	MPOO0267	MPOO0334
MPOO0209	MPOO0268	MPOO0336
MPOO0210	MPOO0270	MPOO0337
MPOO0212	MPOO0271	MPOO0338
MPOO0213	MPOO0272	MPOO0339
MPOO0214	MPOO0273	MPOO0340
MPOO0215	MPOO0274	MPOO0341
MPOO0216	MPOO0275	MPOO0342
MPOO0217	MPOO0276	MPOO0343
MPOO0218	MPOO0277	MPOO0346
MPOO0219	MPOO0278	MPOO0347
MPOO0220	MPOO0279	MPOO0348
MPOO0221	MPOO0280	MPOO0349
MPOO0222	MPOO0281	MPOO0350
MPOO0223	MPOO0282	MPOA0137
MPOO0224	MPOO0283	MPOA0139
MPOO0225	MPOO0284	MPOA0207
MPOO0226	MPOO0285	MPOA0439

The ultrasonic inspections shall be done in accordance with Appendix I to this AD.

This amendment becomes effective on October 7, 1989.

Issued in Burlington, Massachusetts, on September 15, 1989.

Arthur J. Pidgeon,

Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.

Note: Appendix I is not published in the Federal Register. It is available from the Federal Aviation Administration New England Headquarters. See ADDRESSES section. This appendix contains pertinent portions of GE Service Bulletin (CF8-6) S/B 72-947, dated September 15, 1989, and the following documents.

(A) General Electric Manufacturing and Field Quality Technology Procedure No. 391, September 15, 1989.

(B) General Electric Manufacturing and Field Quality Technology Procedure No. 384, dated September 15, 1989.

(C) General Electric Manufacturing and Field Quality Technology Procedure No. 385, September 14, 1989.

(D) General Electric Manufacturing and Field Quality Technology Procedure No. 389, September 14, 1989.

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